## **CLAIMS**

## WHAT IS CLAIMED IS:

- 1. An apparatus for fabricating oriented polymer fibers, the apparatus comprising:
- (a) a dispenser for containing an electrically charged metastable polymer dispersion, the dispenser including a proximal end and a distal end, where the proximal end defines an orifice;
- (b) an electrode positioned near the orifice, wherein the electrode and the orifice define a gap therebetween; and
- (c) a collector for receiving the oriented polymer fibers, wherein the collector is positioned at a distance from the gap.
- 2. The apparatus of claim 1, wherein the dispenser is connected to a source of electric potential for charging the polymer dispersion.
- 3. The apparatus of claim 2, wherein the source of potential is a direct current battery.
- 4. The apparatus of claim 1, wherein the polymer dispersion comprises a polymer and a liquid phase.
- 5. The apparatus of claim 4, wherein the polymer is selected from a group consisting of poly(vinylidene fluoride-co-trifluoroethylene) and poly(lactic acid-co-glycolic acid).
- 6. The apparatus of claim 4, wherein the polymer dispersion further includes doping ions.
- 7. The apparatus of claim 4, wherein the polymer dispersion further includes a surfactant.
- 8. The apparatus of claim 4, wherein the polymer dispersion further includes a biological molecule.

- 9. The apparatus of claim 4, wherein the polymer dispersion further includes a compound decreasing the stability of the metastable polymer dispersion.
- 10. The apparatus of claim 9, wherein the compound decreasing the stability of the metastable polymer dispersion is sodium chloride.
  - 11. The apparatus of claim 1, wherein the collector is grounded.
  - 12. The apparatus of claim 1, wherein the dispenser is fabricated of glass.
  - 13. The apparatus of claim 1, wherein the orifice is a capillary tip.
- 14. The apparatus of claim 1, wherein the orifice has a diameter between about 10 nanometers and 100 micrometers.
  - 15. A method for fabricating oriented polymer fibers, the method comprising:
- (a) positioning an electrode near an orifice of a dispenser containing a metastable electrically charged polymer dispersion, to form a gap between the electrode and the orifice, wherein the dispenser has a proximal end and a distal end, and the orifice is defined by the proximal end of the dispenser;
- (b) electrically pulling the polymer dispersion from the orifice by applying electric voltage to the electrode; and
- (c) collecting the oriented polymer fibers at a collector located at a distance from the gap, and allowing the electropulled dispersion to solidify, wherein the collector is positioned at a distance from the gap, to form the oriented polymer fibers.
- 16. The method of claim 15, wherein the dispenser is connected to a source of electric potential for charging the polymer dispersion.
- 17. The method of claim 16, wherein the source of electric potential is a direct current battery.
- 18. The method of claim 15, wherein the metastable polymer dispersion comprises at least one polymer and a liquid phase.

- 19. The method of claim 18, wherein the liquid phase comprises one or a plurality of liquids.
- 20. The method of claim 18, wherein the metastable dispersion is fabricated by dispersing a polymer in the liquid phase.
- 21. The method of claim 18, wherein the metastable dispersion is fabricated by dissolving a polymer in a solvent to make a polymer solution, and dispersing the polymer solution in the liquid phase.
- 22. The method of claim 18, wherein the polymer is selected from a group consisting of (vinylidene fluoride-co-trifluoroethylene) and poly(lactic acid-co-glycolic acid).
- 23. The method of claim 18, wherein the metastable dispersion further comprises a compound for decreasing the stability of the metastable polymer dispersion.
- 24. The apparatus of claim 23, wherein the compound decreasing the stability of the metastable polymer dispersion is sodium chloride.
- 25. The method of claim 18, wherein the metastable dispersion further comprises biologically active molecules.
- 26. The method of claim 18, wherein the metastable dispersion further comprises at least one surfactant.
  - 27. The method of claim 15, wherein the collector is grounded.
  - 28. The method of claim 15, wherein the orifice is a capillary tip.
- 29. The method of claim 15, wherein the orifice has a diameter diameter between about 10 nanometers and 100 micrometers.
- 30. The method of claim 15, wherein the electric voltage applied to the electrode is between about 20 kV and 40 kV.
- 31. The method of claim 15, wherein the distance between the gap and the collector is between about 10 centimeters and 30 centimeters.